

GREAT EXPECTATIONS: THE HUMAN ASPECTS OF LIBRARY AUTOMATION

Colin Storey*

ABSTRACT

There are specific human groups involved in the process of library automation. During and beyond the installation of a new system, particular physical constraints and emotional pressures are evident in these human groups. For example, the stresses of computerization can bring violent swings of emotion--from elation to depression. As long as librarians pay close attention to what has become known as the "human aspect" of library automation, these more intangible, unseen forces will not jeopardize the chances of a successful implementation which will be of direct and lasting benefit to library users.

There is no doubt that the automation of library procedures and operations now occupies the time of library and information professionals to a large degree in their working life and will continue to do so. Whatever the size of the particular library or the clientele a library serves, a computer screen (or an equivalent tool for interacting with a computer) is bound to be introduced to "assist" in the daily routine of the library and in answering users' information needs. The word "assist" has been placed in quotes in order to emphasize the subject of this presentation. Tons of paper have been generated on the topic of library automation. Most of the literature has taken one of two lines of approach: first, what might be called the "machine-side" of automation: the different systems offered, the hardware and software options available and the functionality of given programs;¹ and

* Associate Librarian, Administration, Hong Kong Polytechnic, Hung Hom, Kowloon, Hong Kong

second, the "what we did in our library to install a system" school of literature.²

If a librarian goes out to choose a system, large or small, whether it is to be loaded on a Cray computer or a BBC micro, there is no shortage of advice offered. The "machine specification" is not the subject of this paper, except where machines impinge upon the human beings set to operate and get the best out of them. The focus here is on a third and less often used line of approach dealing with the "man" or "woman", for convenience, "human", aspects.³ What are computers for if they are not built and run to "assist" humans in their daily tasks?

The danger in such an approach is that the views advanced might be colored by opinionated gossip and subjective judgments, based upon distinctly unscientific premises. No apologies are made if it is thought that some of the ideas expressed here chart such dangerous waters. The whole field, perhaps the word should be "*sea*", of computerization is seething with opinions and rumors spread by people who are either jealous guardians of the sacred fount of knowledge (i.e., computer experts) or modern-day Luddites who fear the end of civilization (i.e., computer ignoramuses), or, like most of us, people who are semi-literate in computer use who try to exploit the beasts to the best possible advantage for all. Librarians and information scientists have a distinct role as mediators to play here: we attempt to use a computer and the information stored on it to the best possible advantage and, we hope, for optimum ease of use. The information we trade in is, for the most part, bibliographic and therefore very complex -- it is not as simple as an account balance in figures presented on a bank machine.

In introducing automation successfully into libraries there are hopes, dreams, nightmares and expectations expressed by human beings on all sides of a highly complex web of interrelationships. In expending such a large amount of time, money and energy on these projects, it is sincerely hoped that they will be successful. Like Pip, the hero of Charles Dickens' *Great Expectations*, the possibilities of a new world are spread before us for good or ill; the old and familiar ground is left far behind.

There are three questions to be examined here:

1. Which human groups are involved in library automation?
2. Under what physical constraints do these people work?
3. What emotional pressures do they bring to bear on the process?

1. HUMAN GROUPS INVOLVED IN LIBRARY AUTOMATION

People involved in the process can be broadly grouped as follows:

- a. the senior management team
- b. suppliers/vendors/consultants
- c. project coordinators
- d. library staff
- e. staff in other departments of the organization
- f. staff of other libraries
- g. library users

a. The Senior Management Team

The senior management of the library must have a complete grasp of the implications of embarking upon automation. They must have a full appreciation of the effort and expense required by the staff and by others in the automation matrix. They must always focus on the long-term goals of the process despite constant diversions of solving immediate problems such as the non-payment of an invoice or the departure of a key technical expert.

Ideally and crucially, one member of the senior management team should be the coordinator of the project. The team should realize that staffing responsibilities, or even the whole organizational structure of the library, may have to evolve in conjunction with the onset of automation. For example, there is a blurring of the duties of traditional technical and reader services operations when a truly "integrated" system is installed.⁴ Again, should an "automation" or "systems" librarian be recruited? At what level? The senior managers must keep a constant eye on the resourcing of the project. As White has pointed out, good management implies that managers ensure that programs drive resources, not the other way around.⁵ The stress upon senior managers (and everyone else) involved in following the moral imperative of continued and ever-better services to library users cannot be underestimated. The stress is so great that a single manager is only willing and able to install very few systems in his or her career. In the last analysis, the senior management team must retain total control over the project; it must not be run by non-librarians. However, adequate support from non-librarians in the institution can be gained by involving them in the negotiations toward securing a vendor contract at the beginning.

b. Suppliers/Vendors/Consultants

These are the men and women in computer sales who "power dress" in expensive suits and tell which systems to buy and which systems to avoid. Their methods can be subtle or crude. Librarians are intelligent human beings and are not supposed to be easily swayed! Anyone involved in library automation has probably heard a salesperson say something like, "This system is a total solution to library automation," or, "We know what makes libraries tick, so our application software loads and runs. It will perform to your specifications," or, "The software is written for librarians by librarians. We have the expertise and resources to do a good job for you." While looking for a system, you will inevitably meet such vendor representatives. They may offer big lunches and free trips to user sites. You will certainly be given glossy folders packed full of information and endless demonstrations of the system's capabilities (usually in a hot, stuffy room *after* the big lunch). After exposure to several demonstrations, any well-meaning, well-planned scientific approach to system selection may seem to be subverted. What do the glossy pictures of happy librarians sitting at terminals actually tell about the system? Because of the convergence in design of library-integrated systems, confusion may reign. After several weeks, you may be asking yourself *which* system it was that allowed for fewer keystrokes in entering a new record for a serials supplier.

It may be a little unfair to include library automation consultants in this group. However, librarians should look long and hard at whether it is worth it to employ a consultant in this capacity. Joseph Green has pointed out that these consultants can spend too much time looking for answers *they* should provide and telling you what you already know. They may also create a general atmosphere of distrust, and even promote the product of one vendor over another.⁶

The way to cope with such sales pressure, be it subtle or crude, is to adopt a range of responses. For example, a healthy skepticism and gentle disbelief should be indicated at any of the more sweeping statements made about a system's capabilities. Disavow any overuse of jargon by pretending not to understand it. Ignore any statement which talks of increased investment in developing software as yet unwritten ("vaporware"). Never place too much trust in the number of support staff the vendor is about to hire. Library software vendors, particularly the smaller, newer companies, soon become horrified at the high level of support expected. If possible, talk to the representative directly involved in software support -- out of the earshot of the salesperson. In representing the library, you should display a

total lack of sentiment or loyalty to any one firm, even if that firm installed the existing system long ago, and has given valuable service over the years.

Once the new system is installed, the relationship with the successful vendor is bound to change. For example, it is difficult to avoid forging a close relationship with a software engineer that spends an entire weekend working with trying to correct a system fault. Here there has to be a difference in the approach to engineers on the ground and their managers. The engineers know (or should know) the system. They have a foot in both camps. You need to keep them as loyal to your operation as possible. If anger is called for, go as high as possible in the firm to make a point (IBM managers are trained to call problems "opportunities"). Tell senior managers the problems and give them the opportunity to solve them speedily and effectively. If this does not happen, bring in more senior personnel from your own institution. Above all, as Rene McPherson has said, "You just keep pushing. You just keep pushing. I made every mistake that could be made. But I just kept pushing."⁷ If this fails, there is always the recourse of legal opinion. However, it is a fair axiom in library automation that resorting to law not only makes public a profound failure both in the implementation of a system and in human communication, but also is -- practically speaking -- usually non-productive and certainly retrogressive.

c. **Project Coordinators**

Project coordinators are people usually based in the library, charged with implementing and running the system. Whether the system is large or small, there should never be only one coordinator. To maintain a system forever -- which is what the decision to automate means, in essence -- at least two people should be able to understand it. Naturally, one person should be the overall manager of the project. This person should be a senior manager in the library organizational structure. He/she should be delegated the power as well as the responsibility to bring in the system across all sections of the library. Project coordinators have a very public and very political job to do. They must be prepared to work long, unsocial hours. They are required to gain the respect of their colleagues inside and outside the library, and to endeavor to retain that respect through good times and bad. One of the greatest difficulties in retaining such respect lies in a profound contradiction at the heart of the project coordinator's role. In many senses, the coordinators become system salespeople themselves. In order to "sell" the new technology to colleagues, they have to be both realistic and optimistic about the successful completion of the program. It is not uncommon for

library staff to ask the coordinators midway through an implementation, "Why didn't you tell us it would be this troublesome?" The answer is, of course, that even if the coordinators had anticipated the problem, it would have been unwise to give colleagues the impression that awful times lay ahead. To emphasize a previous point, pushing for the successful implementation of a system cannot be done without displaying a certain belief and optimism in a profitable outcome. After all, the coordinators, in all probability, were party to choosing the system in the first place, so their confidence ought to be well-founded.

In a half-serious vein, Moore suggests some "underhanded strategies" for "devious" project coordinators to elicit cooperation from library colleagues. She cites making the system more complex than it really is and confusing staff by changing the rules as the implementation progresses as particularly powerful weapons.⁸ The long sessions to parameterize policies for the new system before implementation (and before anyone has any real, live experience with the system on site) is a good example of this. If challenged, many experienced coordinators might admit to these strategies, especially at times when they are very busy learning the system themselves and only one page ahead of their colleagues in the manuals. "Divide and conquer" is another useful weapon, and best utilized through the medium of countless committee meetings. Moore finally proposes that if all else fails, the coordinators should demand to be trusted. This device is not quite as foolhardy as it sounds, but a little too cynical. In the final analysis, despite any moral uncertainty that coordinators may experience in the compromising positions they sometimes have to adopt, they should never lose sight of the broad message to colleagues. They should be constantly stressing that the acquisition of a new automated system is a natural and expected development in the library's service to its users.

d. Library Staff

Each member of the library staff has a different perception and level of appreciation regarding the use of computers. An ability to deal with computers cannot be typified by age or sex, but rather by an eagerness to come to grips with the new technology. This eagerness is much more evident in the Far East than in the West, and, for good or ill, is not normally dampened by trade union involvement. Library colleagues will have valuable suggestions to make. If annoyed, they will always blackmail other people in the communication chain, like the coordinators, by rightly insisting that they are "on the front line," but perhaps misguidedly asserting that they know the

wishes of the users better than anyone else. Sometimes they are justified in feeling ill-used. The circulation system may have been down for two days and the vendors are nowhere in sight; the coordinators have gone to ground and may have not appeared in the staff room for coffee and a chat for a week. Where is the support and backup the library staff were led to believe would be constant and assured?

It may be stating the obvious, but good and continuous communication is required. Library staff will always believe that they are not being told enough. Tell them too much and their eyes glaze over because they probably did not need to know it. Tell them too little and they become agitated. The most difficult situation of all arises when everyone is waiting for news signifying the solution to a problem, *including* the coordinators. Should a meeting be called to tell people there is no news yet? Long periods of silence are injurious to good communication, but so are meetings with no agendas.

To be fair, library staff have to adjust constantly to the pressures of the new era. They need to maintain a positive attitude to the procedural changes, general reorganizations and retraining necessary to keep up with developments. Making everyone feel they are an integral and valuable part of the new environment is one of the most arduous tasks facing a library manager. Of course, there will be advocates for change and those who will resist it. There will be many who will insist on harking back to the halcyon days of the "old" system -- whether it be a manual/paper-based one or outdated/superseded software. Some will insist, even years later, that the wrong system was purchased. Others will say that if they had been coordinating the automation, they would have done it differently and from a different starting point.⁹ These people will constantly remind others of the great opportunities missed because their views were not taken into consideration at the outset. True, human character cannot be changed, but an individual of this sort might respond positively if an active interest is taken in his/her personal and professional development -- even if it takes a great deal of time and effort.

e. Staff in Other Departments of the Organization

As indicated above, the lobbying and political side of automation should never be underestimated. Library automation managers need backup from hardware and software experts, accountants and lawyers who are "on their side." Who will be positive and help? Who will be negative and obstruct? Other departments in the institution may have been denied the

funding for their own computerization plans that the library has been granted. They will be looking closely at the progress of the project. Most importantly of all, the senior directors or elected members on the library's management committees need to be assured that the automation process, with all its expense and intermittent "disasters," is a positive step forward. Tell them at the outset that the initial capital investment is only the first step in maintaining library involvement in state-of-the-art technology. Gently persuade them that further capital spending will be required, together with an increasing call upon revenue funds for system maintenance. In short, *never* underestimate costs, and *never* use a consequent reduction in staffing as a reason for computerization.

f. Staffs of Other Libraries

The staffs of other libraries will be keenly interested in what you are doing, whether they are installing the same system or a different one. This is, hopefully, a sign of *healthy*, professional rivalry. Establish good relations with them and listen to their views. Project coordinators from different libraries may be guarded in their conversations. They will not wish to break ranks and talk about internal matters externally. They may also be too politically aware to say very much. They know the constraints placed upon any coordinator when developing systems, so they should have a sense of quiet understanding of another library's problems. If coordinators feel smug about another's problems, it is probably because those problems are in the one area they have not yet had trouble with. If you talk to library staff on the ground, they will always tell a somewhat different story. An event seen as a tactical hiccup by a general may well be regarded as a strategic disaster by the soldiers in the field.

In listening to the opinions of staff from other libraries, remember some of the general characteristics of the library automation market. In a very real sense, the best system there is is the one on the screen in front of you. It is all you will be able to afford for some considerable time. Installation failures have occurred around the world. Few librarians have ever gone into print about such matters, because failures are not only hugely expensive flops, they are also professionally embarrassing.¹⁰ A particular library's choice of an automated system is sure to be controversial. As victims of political and economic pressures, librarians sometimes seem to make rather bizarre decisions. All librarians have either said or heard someone say, "Why did that library ever choose such a rotten system?" or, "I hear the system is costing twice as much as expected." It is instructive to read

Rush's article discussing how libraries end up with a particular automated system. He insists that libraries are "seldom well-managed" by people with the correct mix of "technical knowledge and experience." The automation marketplace is characterized by "inertia" because of the slowness of public bodies, like libraries, to secure adequate funding. The rumor network in the library world ensures that:

"... news travels very fast. However, as most vendors are aware, news often consists largely of rumor rather than fact, and innuendo rather than forthright praise or criticism (deserved or not). This marketplace characteristic requires that vendors be very careful what they say and do, lest their words and actions be misrepresented, or worse."¹¹

The same advice is often needed by librarians themselves.

g. Library Users

Dyer says that "a central argument" for automation is the improvement it will bring to reader services.¹² In fact, advantages to users should be "the central argument." Users are the most important people of all. At all times, the assumption should be that the automated system being installed is for the direct benefit of users. The users are the innocent bystanders of a library's transition to the new technological age. To respond to their needs effectively, librarians need to re-orient users and survey their opinions. Public relations can always be enhanced by direct personal contact or by communication via flyers, posters, newsletters and even free gifts such as T-shirts. When a milestone has been reached in the project, let the users know, especially if it is of direct and obvious benefit to them.

There is a down side. There may be slippage and delay in the planned implementation. The new circulation system may have to be installed in the middle of the library's busiest month. Blaming problems on "the vendor," "the management," or "this new-fangled computer" is easy. Convincing users afterward that the fault was temporary and has been rectified is much more difficult. These same users are themselves becoming ever more computer literate and sophisticated in their information needs.

For example, their use of the online catalog will inevitably become more refined. Monitoring the use of the online catalog and its response time is a key issue in slowly releasing more central processing unit (CPU) power for this purpose. Giving users a fast response time at the outset requires the maintenance of this same response time in perpetuity, even if the number of terminals hooked onto the system has doubled.

2. PHYSICAL CONSTRAINTS

The physical constraints placed upon us as individuals are:

- (a) Ourselves; human factor engineering; ergonomics
- (b) The environment; the building occupied; the hardware already used; the telecommunication networks already in place; the software limitations
- (c) The work librarians do; the work flow; material processing

Human beings must use computers, but they are not very well-gearred for them. New technological devices may be labor-saving, but for the shape and health of the human body, they are not very "ergonomic." A great deal has been written about ergonomics, or human factor engineering, in relation to the use of computers.

Suffice it to note here that librarians work in public buildings that were probably erected years ago and are cluttered with a huge amount of books, other media of various sizes, equipment and stationery. Once computers are introduced, there are wires (and boxes) everywhere. The furniture used is by and large not ergonomic. When you sat down to read this article did you maintain an erect posture for more than a few minutes, or were you soon slouched over in the chair? How do you feel after two hours on an issue desk looking at screen after screen of flickering green alphanumeric characters? All of these kinds of human physical constraints add to the frustration of using new technology.

Assuming you are comfortable at a workstation, is your health in danger? Questions regarding the healthy use of new technology have been at the forefront of discussions in the West. They have involved an examination of the risks in using a terminal of radiation, epilepsy and dermatitis, as well as general risks to women during pregnancy. One particular risk is worth using as an example, a condition identified in the United States and Australia as "Repetitive Stress Injury" (RSI). This is caused by constantly hammering away at a computer keyboard and responding interactively (some would say slavishly) to the commands the computer issues. There is no doubt that prolonged activity of this sort does affect people. We are perhaps fortunate in libraries that the majority of our tasks do not necessitate long, unbroken hours of straight data entry. Frequent breaks from video display terminal (VTD) work--say every 30 to 60 minutes--help considerably. A negative ion generator that emits a stream of particles into an office atmosphere is supposed to reduce human tension--a claim which is questionable and

difficult to test satisfactorily. In Asia, the use of ergonomic factors to determine work flow and comfort in libraries is minimal. Library managers owe it to the library staff to bring in such considerations. However, once introduced, ergonomic factors raise the expectations of staff and naturally cost money to implement.

3. EMOTIONAL PRESSURES

Finally, it is worth enumerating some of the conflicting emotional pressures which are brought to bear on any automation project:

Negative

a. Fear

- of the new
- of failure
- of obsolete skills and even redundancy
- of each other
- simply, of change.

b. Cognitive dissonance

- in morally compromising positions

c. Risk

- of public exposure and user disappointment
- of financial disaster
- of damage to institutional and personal reputation.

d. Frustration

- at delays
- at unkept promises.

e. Depression

- with reduced expectations
- when an unplanned-for problem asserts itself

f. Helplessness

- at being at the hands of others.

Positive

a. Anticipation

- of the new and exciting
- in leap-frogging technology

b. Human interaction

- in bringing together staff

c. Elation

- at a major or minor victory.

d. Personal development

- in realism and honesty

- in compromise

- in managing the sometimes unmanageable.

It is the library manager's job to realize that the negative emotional pressures of automation usually outweigh the positive. The emotional level in automation can sometimes be very high. The strains between individuals and between groups sometimes seem insurmountable. One of the natural phenomena in the automation process is the perceptible differences in human learning curves and acquisition of knowledge. Some individuals will learn faster than others. Senior managers may not have the ability, time nor inclination to delve very deeply into the detail of the new system. A library assistant may soon be showing a professional with 20 years experience what to do.

The burden of guilt, fear or ignorance of new technology is felt at all levels in the organization. Everyone is trying to keep up. At the time of writing, the new "buzz technology" for libraries is the CD-ROM medium. Librarians are coming to terms with it quickly. Many have realized that it is not a medium which will transform libraries from the roots. It is merely a transitional element in the continuing use of new forms of information technology.¹³ The message is that fear and anxiety about the rate of change is general. It should not be allowed to consume you. Change, it is argued by some commentators, is now the norm. Worry too much about it and you will experience burn-out.¹⁴ Expect change, gear for change; it is "ubiquitous, continuous and universal."¹⁵ You are not alone in worrying about keeping up with the new technology. The United States-based trade group, the Association for Computer Training and Support, found that one-third of all office vendor software lay idle for six months after purchase. Even when the software is loaded, people seem to use only 20 percent of its features 80 percent of the time.¹⁶ Fear of loss of face resulting from a momentary display of ignorance can sour or even ruin the progress of implementation. Everyone knows less about information technology than they think they do; everyone wants to know more.

White has written about the "tyranny" of the team approach. Senior managers should value any team spirit generated or reinforced by the automation process, but never be afraid to hire or promote individuals who differ from the norm: brilliant but "unteamable."¹⁷ There should be "wild cats" as well as "fixers."¹⁸ Clashes between different professional groups can lead to difficulties. A school librarian might be faced with a teacher who

wonders why such a user-friendly new system cannot display information about a particular poem by Bo Zhuyi rather than just collections of his works. A coordinator in the library might well be removed from the project because the data processing personnel in the computer center believe they are more qualified to implement the new technology.

Finally, take heart that everyone makes mistakes. Plans will go awry, however detailed, and human factors will have a part to play in the delays. Never lose sight of the obvious fact that automation projects are very big and very diverse. Libraries are complex organizations. Develop a general sense of ownership of the new system in all groups and try to make goals explicit.¹⁸ Librarians should not underestimate the skills required to reach the point where a new online catalog help screen is first displayed -- as planned -- at 9 a.m. on a Monday morning. A user may compliment you on a "useful system." This is a significant moment. It can raise low spirits to high spirits in an instant. It may be transitory, but it is worth savoring fully. After that, take a deep breath and move on to the next development. The rewards in automating a library successfully outweigh all the negative elements.

REFERENCES

1. See, for example, the annual reviews of systems available in the marketplace in the U.S. in the *Library Journal* (usually in April) and the corresponding United Kingdom version (Blunden--Ellis, John. "A U.K. Market Study of Large Library Automation System Vendors (to January 1989)", *Program*. Vol. 24, no. 1, (January 1990) : 59-71. There are informal reviews in the ALA's *Library Systems Newsletter*.
2. The journal *Vine* is full of such articles.
3. Two useful monographs on this subject have appeared recently: Dyer, Hilary (with Anne Morris). *Human Aspects of Library Automation*. Aldershot: Gower, 1990; Bergen, Ceris. *Instruments to Plague Us? Human Factors in the Management of Library Automation*. Bradford: MCB University Press Limited, 1988.
4. There are very few case studies in the literature about the actual reorganizations that have taken place because of automation. See, for example, Gorman, Michael, "Re-organization at the University of

- Illinois--Urbana/Champaign Library: A Case Study. *Journal of Academic Librarianship* Vol. 9, (September 1983) : 223-225. A more general theoretical approach is taken in Lewis' brilliant summation: Lewis, David W. "An Organizational Paradigm for Effective Academic Libraries." *College and Research Libraries*. Vol. 47, (July 1986) : 338-353.
5. White, Herbert S. "Librarian Burnout." *Library Journal*. (15 March 1990): 65.
 6. Green, Joseph. "The Ideal Consultant." *Library Journal*. (15 February 1989): 134.
 7. Peters, Thomas and Robert H. Waterman Jr. *In Search of Excellence: Lessons from America's Best Run Companies*. New York: Harper and Row, 1982. p.319.
 8. Moore, Barbara. "Underhanded Strategies." *Library Journal*. (1 February 1985): 62.
 9. Drabensott, Jon. "Truth in Automating: The Multi-Library Experience." *Library Hi-Tech* 7, no. 3 [Cumulative Issue No. 27] (1989) : 53-68.
 10. Notable exceptions are: Herholdt, Annette "Library Automation at Wits: A Case Study and Analysis." *Wits Journal of Library and Information Science* No. 4, (December 1986) : 1-18. see also Drabensott, op. cit.
 11. Rush, James E. "The Library Automation Market: Why Do Vendors Fail? A History of Vendors and their Characteristics" *Library Hi-Tech* 6, no. 3 [Cumulative Issue No. 23] (1988): 22.
 12. Dyer, Hilary. op cit. 212.
 13. Miles, Ian, and others. "Information Horizons: the Long Term Social Implications of New" *Information Technologies*. London: Edward Elgar, 1988.
 14. White, Herbert S. op. cit.

15. Martel, Leon. *Mastering Change: The Key to Business Success*. New York; Simon and Schuster, 1986. 31. See also: Curzon, Susan C. *Managing Change: A How-To-Do-It Manual for Planning, Implementing and Evaluating Change in Libraries*. New York: Neal-Schuman, 1989.
16. Hendren, John. "Productivity Hit by Human Problems." *South China Morning Post* (11 December 1990).
17. White, Herbert S. "The Tyranny of the 'Team.'" *Library Journal*. (15 April 1989): 54-55.
18. Dickmann, Julia. "Managing a Large Automation Project: Observations Based on the Surrey County Library Experience." *Program* 24, no. 4, (October 1990): 329.
19. Olson, Susan. "How to Automate Smoothly." *OCLC Newsletter*. no. 177 (January-February 1989): 12-21.